

### **REMARKS**

After entry of this amendment, claims 13, 14, and 26 to 40 will be pending. New claims 37 to 40 have been added and find support at, for example, pg. 4, ll. 16-17 and pg. 5, ll. 11-14 of the specification. No new matter has been added.

Claims 13 and 14 stand rejected under 35 U.S.C. § 103 as allegedly obvious over Deller et al., U.S. Patent No. 5,166,120 ("Deller"). Applicants respectfully traverse this rejection because Deller fails to teach all of the elements of the claims.

Claims 13 and 14 are directed to a catalyst support in the form of a "metallic monolith having channels." Deller describes a catalyst supported on a carrier in the form of an *annular carrier*. Figure 2 of Deller shows the shape of such a carrier. Deller is silent on a carrier being made of metal or on the surface area per unit volume of the carrier.

The Office Action acknowledges that Deller does not teach the exact dimension or the exact material as claimed, but states that while not disclosed, these are "known equivalent structures." There is no evidence to support this conclusion that conventional and widely used in the art, annular ceramic carriers, would be considered as equivalent structures to metallic monoliths having channels. Further, regardless of the dimensions, the annular carrier of Deller has only a *single* internal channel, whereas claim 13 of the present application requires a plurality of channels ("a monolith having *channels*" (emphasis added)).

Since Deller does not disclose the use of a *metallic monolith support having channels*, as recited in the rejected claims, the reference fails to establish a *prima facie* case of obviousness. Accordingly, Applicants respectfully submit that the rejection should be withdrawn.

Claims 26 to 36 stand rejected under 35 U.S.C. § 103 as allegedly obvious over Shiozaki et al., U.S. Patent No. 4,366,093 ("Shiozaki") in view of Eichhorn et al., U.S. Patent No. 4,740,644 ("Eichhorn"). Applicants again respectfully traverse this rejection, because the cited references, even if combined, fail to teach all of the elements of the claims.

As noted in Applicants' previous responses, Shiozaki teaches the potential use of *pellets* as catalyst supports for fixed bed processes and reactions, where the pellets are in the shape of hollow cylinders, 3 to 6 mm. in outer diameter and length (*see* Abstract). Eichhorn describes the preparation of 1,2-dichloroethane by oxychlorination of ethylene over a copper-

containing catalyst. Eichorn teaches that the catalyst is impregnated “on a conventional carrier” (col. 3, lines 33-34) without elaboration. The examples in Eichhorn are performed with catalysts as annular pellets having a height and external diameter of 5 mm (*see* col.2, lines 51-52). Thus both of these references describe the use of catalysts *in pellet form*, and neither of these references contains any disclosure of catalysts *supported by a metallic monolith having channels* the walls of which are adapted to receive a catalytically active phase for selective gas phase reaction in tubular reactors, as recited in independent claims 26 and 34.

It appears that the Examiner is mistaking the catalyst *pellets* of Shiozaki for metallic monolith *catalyst supports*. However, as should be readily appreciated, a metallic monolith *support* is different from the catalyst itself. The use of a metallic monolith to support the catalyst in a selective reaction provides a number of advantages neither taught nor suggested by the art of record. These advantages include:

- Improved properties with respect to heat production and hot-spots;
- Slower catalyst deactivation;
- Higher reaction purity and selectivity;
- Improved pressure properties;
- The possibility of using larger diameter reaction tubes (which may ultimately lead to lower cost); and
- The possibility of using single reactors and single reactor feed points as opposed to multi-reactor systems and multiple feed inlets.

Since neither of the cited references disclose the use of a metallic *monolith support*, as recited in the rejected claims, the references fail to establish a *prima facie* case of obviousness. Accordingly, Applicants respectfully submit that the rejection should be withdrawn.

### **CONCLUSION**

Applicants respectfully submit that the pending claims are in condition for allowance. Withdrawal of all pending rejections and a Notice of Allowance for all of pending claims 13, 14 and 26 to 40 is earnestly solicited.

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**PATENT**

If the Examiner is not persuaded that the application is in condition for allowance, Applicants request that an interview with the Examiner and her supervisor be arranged at the Examiner's earliest convenience. Applicants undersigned representative may be reached via direct dial at (215) 564-8392.

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